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## Not all diatheses are created equal: Evidence from semantic drifts

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This paper examines the distribution of Modern Hebrew semantic drifts across four diatheses (voices): transitives, unaccusatives (anticausatives), adjectival (stative) passives, and verbal (eventive) passives. A quantitative survey of dictionaries reveals a discrepancy between these diatheses: Only transitives, unaccusatives, and adjectival passives can give rise to unique semantic drifts, unshared with their related root counterparts, while verbal passives cannot. A corpus-based study shows that frequency is unable to account for this finding; nor can approaches demarcating a syntactic domain for special meanings. I propose that semantic drifts are stored as subentries of the entries from which they evolved, as long as the drift's frequency remains smaller than or equal to that of the original entry. Once the drift's frequency greatly surpasses that of the original entry, it is stored as an independent lexical entry. In light of that, I suggest that predicates giving rise to unique semantic drifts have to constitute lexical entries. It thus follows that transitives, unaccusatives, and adjectival passives are formed and listed in the lexicon, while verbal passives are not. Consequently, the lexicon is argued to function as an active (operational) component of the grammar, contra syntacticocentric approaches.

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## 1 Introduction

Recent decades have witnessed an increasing interest in special (idiomatic) meanings in the context of grammatical theory (e.g., Fillmore et al. 1988; Jackendoff 1997; Horn 2003; Harley 2012; Vietri 2014; Schröder 2015; Horvath & Siloni 2017). Thus, for example, gaps have been observed in the distribution of idioms across diatheses in French (Ruwet 1991), Chichewa (Dubinsky & Simango 1996), and English (Marantz 1997), and their existence was quantitatively reinforced for Modern Hebrew (Horvath & Siloni 2009; 2019) and English (Fadlon et al. 2018, Horvath & Siloni 2019). Specifically, attention was drawn to the absence of idioms that are specific to the verbal (eventive) passive.

Horvath & Siloni (2009; 2019) and Fadlon et al. (2018) report the results of quantitative surveys focusing on sets of Modern Hebrew and English phrasal idioms headed by four different diatheses: transitives, unaccusatives (anticausatives), adjectival (stative) passives, and verbal (eventive) passives.<sup>1</sup> They sample 60 predicates of each diathesis from verb dictionaries, and count the number of predicates giving rise to phrasal idioms *unique* to each of the diatheses (see definition in §2). Their studies reveal no unique phrasal idioms that are headed by a verbal passive in both Hebrew and English; namely, all idioms headed by a verbal passive are also shared by the transitive (active) alternant. In contrast, transitives, unaccusatives, and adjectival passives prove able to head idioms specific to them.

If this pattern is not incidental, it should be replicated in other types of special meaning, such as semantic drifts. Both idioms and semantic drifts qualify as *special meanings*, since they involve meanings that are typically idiosyncratic (i.e., unpredictable based on the meaning(s) of the word(s) comprising them). Indeed, Horvath & Siloni (2008) observe a similar gap in the distribution of Hebrew semantic drifts. However, they compare only one diathesis to the verbal passive: that of the adjectival passive, and they do not base their claims regarding semantic drifts on a quantitative survey. Both caveats will be addressed in the current study.

The study focuses on the same diatheses/voices inspected in the above-mentioned idiom surveys: Hebrew transitives, unaccusatives, adjectival passives, and verbal passives. It first provides the results of a preliminary pilot survey based on informal searches, and subsequently reinforces them using a quantitative survey. Both the pilot and the quantitative surveys inspect the distribution of semantic drifts in the same four verbal/adjectival diatheses, and reveal a gap identical to the one found for idioms: The verbal passive proves unable to “drift” independently of its transitive alternant, while its fellow diatheses do give rise to unique semantic drifts.

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<sup>1</sup> In line with Horvath & Siloni (2019), *phrasal idioms* are headed by a lexical head, like V (e.g., *bark up the wrong tree*), while *clausal idioms* are headed by a sentential functional head, such as a fixed tense (e.g., *The genie is out of the bottle*), obligatory (or impossible) sentential negation (e.g., *not grow on trees*), or CP-material (in C or Spec.CP, e.g., *if/when push comes to shove*).

A corpus-based study comparing the frequency of (uniquely-)drifted and non-drifted predicates from the various diatheses attempts to account for this discrepancy, as previous research has shown frequency to be a determining factor behind processes of semantic change. The latter are often associated with an increased frequency of the item whose meaning expands (e.g., Feltgen et al. 2017). The absence of unique special meanings headed by verbal passives can thus be attributed to the relative scarcity of the verbal passive in spoken language compared to written language, as the former is the natural habitat for semantic change. Indeed, the low frequency of verbal passives in spoken language has been reported for various languages, including “passive-friendly” ones (English: Biber et al. 1999; Danish, Norwegian, and Swedish: Laanemets 2009; German: Vogel 2003;<sup>2</sup> Chinese: Xiao, McEnery & Qian 2006; and Czech: Plecháčková 2007).<sup>3</sup> Moreover, the fact that the Hebrew verbal passive is even more limited compared to its equivalent in other languages, like English (Berman 2008; Dekel 2014; Jisa et al. 2002), can lend further support to the verbal passive’s inability to head unique special meanings in Hebrew. However, the corpus-based study provides no clear evidence that diathesis frequency and (non-)drifted predicate frequency underlie the gap associated with the verbal passive. Another account, revolving around the locality of special meanings is examined, and finally, inter-diathesis qualitative differences related to their derivation and storage (or lack thereof) are opted for.

The paper is structured as follows. §2 defines *semantic drift* and *uniqueness*. §3 provides the results of the preliminary pilot survey inspecting the distribution of Hebrew semantic drifts. §4 presents the methods and results of the quantitative survey investigating the distribution of Hebrew drifts, along with an interim discussion of those results. §5 presents the methods and results of the corpus-based study examining the frequency of (uniquely-)drifted and non-drifted predicates in the different diatheses, along with an interim discussion of those results. §6 discusses the results of both studies, offers an analysis, and addresses possible counterexamples. Finally, §7 concludes the paper.

## 2 Defining semantic drift and uniqueness

*Semantic drift* is a concept referring to a diachronic change in the meaning of a word, or extension of an existing meaning of a word. Grzega & Schöner (2007: 41) define it as “the type of lexical change in which no formally new creation occurs, but an already existing form is extended in use”. Semantic drifts differ from idioms, as the former are special meanings of single lexical items, while the latter are multilexemic expressions involving the special interpretation of lexical items relative to one another.<sup>4</sup>

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<sup>2</sup> Vogel (2003) investigates German chat communication, which she categorizes as spoken language.

<sup>3</sup> Plecháčková (2007) inspects novels, comparing narrative passages to conversations imitating spoken language.

<sup>4</sup> It has been argued that the special meaning of words is no different from that of idioms (e.g., Jackendoff 1997; Marantz 1997; Bruening 2014), but I keep them separate since idioms, given their multilexemic makeup, raise questions that are orthogonal to the present study (Horvath & Siloni 2009; Fadlon et al. 2018; Siloni et al. 2018; Horvath & Siloni 2019).

In some cases, a word undergoing semantic drift becomes more frequent in its new meaning, so much so, that the original meaning is no longer productive and remains in use only in frozen expressions. For instance, the Hebrew adjectival passive *dafuk* originally meant ‘knocked/hammered/beaten’, but has drifted, assuming the meaning of ‘defective/damaged’.<sup>5</sup> The latter has become so prevalent, that even in contexts like (1a), with which interpretations like ‘hammered’ are expected to mesh naturally, the original meaning is not the common interpretation today. However, the “old” meaning is still preserved in very specific contexts, as in (1b), although the drifted interpretation is allowed as well (and for some speakers the latter is retrieved first).

- (1) a. *ha-masmer ha-ze dafuk.*  
 the-nail.M the-this.M hammered.SG.M  
 ‘This nail is damaged.’
- b. *ha-zeytim ha-‘ele dfukim.*  
 the-olives.M the-these beaten.PL.M  
 ‘These olives are beaten/damaged.’

When dealing with semantic drifts, we deal with lexical ambiguity, a term which is itself ambiguous. Many researchers distinguish *polysemy* from *homonymy* (Lyons 1977; Foraker & Murphy 2012, among many others). The former involves multiple semantically-related *senses*, such as the word *paper*, which can denote the substance made of wood pulp, a sheet of that substance, a newspaper, etc. In contrast, the latter is argued to arise by accident, as the two (or more) *meanings* associated with the same phonological representation are very different, and cannot be construed as related. An emblematic example is the word *bank*, denoting both the financial institution and the side of a river. Kempson (1977) argues that this polysemy-homonymy distinction has no theoretical significance, but the psycholinguistic literature reports contradicting results concerning the processing of polysemy and homonymy. For example, results from eye-tracking experiments have determined the two as both different (e.g., Frazier & Rayner 1990) and similar (e.g., Shen & Li 2016).

The drifts included in the current study seem to be categorically interstitial, as they do not fall neatly into any of these categories. Some of the senses/meanings seem to be more related than others. For instance, the relation between the senses/meanings of the adjectival passive *galuy*, which means both ‘revealed’ and ‘honest’, can be easily detected. The same is true, I believe, for the unaccusative *nidbak*, which can mean both ‘got stuck/glued’ and ‘imposed one’s presence’. Nevertheless, the connections between these meanings seem looser than the ones attested between the different senses of the word *paper*, for example.

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<sup>5</sup> Most of the drifts reported in this study are characteristic of a more casual, informal register, while their original entries are not.

In contrast with items like *galuy*, it is more difficult (albeit not impossible) to define the relation between the meanings of the adjectival passive *gazur*, which can mean both ‘cut’ and ‘doped’, or of the unaccusative *nafal*, which means both ‘fell’ and ‘died in battle/war’. The adjective provided in (1), *dafuk*, which can mean both ‘beaten’ and ‘defective’, is probably situated somewhere in between. Given the fuzziness of the semantic relatedness of the ambiguities under inspection (see also Durkin & Manning 1989), I shall not use the polysemy-homonymy distinction to categorize the drifts investigated, but I will refer to several studies that did so when I discuss the ways in which these drifts are stored in the lexicon (§6.1).

Since the current study deals with drifted predicates, different possibilities arise concerning the post-drifting output. Drifts may either keep the same argument structure of the input (compare (2a) to (2b); both involve a single, internal argument), or change the argument structure of the input (compare (2a) to (2c-d); while (2a) involves a single, internal argument, (2c-d) involve two arguments: external and internal). In the latter case, drifts may require a specific preposition (see the internal argument in (2d), which involves the preposition ‘*al* ‘on’). The requirement for a preposition might seem as if the altered meaning is extended beyond the boundary of the word, and may thus qualify as an idiom. Nevertheless, these cases do not involve a collocation comprising of a predicate and a preposition, which assume a new meaning together; rather, it is the change in the valence of the predicate that sets the requirement for a specified functional preposition.<sup>6</sup>

- (2) a. *ha-kelev šeli met.*  
 the-dog my die.3SG.M.PST  
 ‘My dog died.’

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<sup>6</sup> Horvath & Siloni (2009) treat the sequence *met ‘al X* as an idiom, but in later work, Siloni et al. (2018) eschew verb + preposition and verb + particle combinations, focusing instead on special meanings of lexical (not functional) items relative to one another. I agree with this distinction and argue that a special meaning supposedly pertaining to a lexical item and a functional item, in fact pertains to the lexical item alone, since the requirement for a certain functional item derives from the semantic change applying to the lexical one. The sequence *met ‘al X* (see (2d)) is a case in point. The two words *met ‘al* had not formed a syntactic structure, and then assumed a new meaning; rather, only the verb acquired a new semantic value: ‘dotes’, and since it has become transitive, it requires a preposition.

This is undergirded by the additional semantic drift of *met* exemplified in (2c), which is similar in meaning to ‘dotes’, but requires no preposition, as it involves a sentential complement. Drifted adjectives assuming the same meaning of ‘dotes/doting’ provide further support, as they all require the same preposition required by the drifted *met*: ‘*al* ‘on’, while no such requirement holds for their pre-drifted versions. See e.g. *xole* ‘sick’, *saruf* ‘burnt’, *metoraf* ‘crazy’, and *ganuv* ‘stolen’ (i).

- (i) *dan xole / saruf / metoraf / ganuv ‘al sara.*  
 Dan sick.SG.M.PRS burnt.SG.M.PRS crazy.SG.M.PRS stolen.SG.M.PRS on Sarah  
 ‘Dan dotes on Sarah.’

- b. *ha-maxšev šeli met.*  
 the-computer.M my die.3SG.M.PST  
 ‘My computer stopped working.’
- c. *dan met le-‘exol pica.*  
 Dan die.SG.M.PRS<sup>7</sup> to-eat pizza  
 ‘Dan really/desperately wants to eat pizza.’
- d. *dan met ‘al sara.*  
 Dan die.SG.M.PRS on Sarah  
 ‘Dan dotes on Sarah.’

A semantic drift can be *shared* between different diatheses of the same root (3a-d), and it can be *unique* to a given diathesis, being unavailable to other diatheses sharing its root ((4a-d); # means the sentence does not allow a drifted meaning for the predicate involved).

- (3) For the root *d.b.k*, whose original meaning has to do with glue, the drifted meaning related to infection is available in all diatheses: *nidbak* ‘got glued’ (unaccusative (a)), *hidbik* ‘glued’ (transitive (b)), *mudbak* ‘glued’ (adjectival passive (c)), and *hudbak* ‘was glued’ (verbal passive (d)):

- a. *dana nidbeka mi-dan.*  
 Dana get.glued.3SG.F.PST from-Dan  
 ‘Dana got infected by Dan (inadvertently).’
- b. *dan hidbik et dana.*  
 Dan glue.3SG.M.PST ACC Dana  
 ‘Dan infected Dana.’
- c. *ha- guf mašmid et ha- ta'im ha- mudbakim.*  
 the-body.M destroy.SG.M.PRS ACC the-cells.M the-glued.PL.M.  
 ‘The body destroys the infected cells.’
- d. *dana hudbeka ‘al-yedey dan.*  
 Dana be.infected.3SG.F.PST by Dan  
 ‘Dana was infected by Dan.’

- (4) For the root *p.c.c*, whose original meaning concerns explosion, the jealousy-related drifted meaning is only available in the unaccusative *hitpocec* ‘exploded’ (a), but not in the transitive *pocec* ‘blew up’ (b), the adjectival passive *mefucac* ‘blown up’ (c), or the verbal passive *pucac* ‘was blown up’ (d):

- a. *dan hitpocec kše- ra'a et ha- mexonit ha- xadaša šel ron.*  
 Dan explode.3SG.M.PST when-see.3SG.M.PST ACC the-car.F the-new.SG.F of Ron  
 ‘Dan was extremely jealous when he saw Ron’s new car.’

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<sup>7</sup> The past and present third-person singular forms of *la-mut* ‘to die’ are identical.

- b. #*ha-mexonit ha-xadaša šel ron poceca et dan.*<sup>8</sup>  
 the-car.F the-new.SG.F of Ron blow.up.3SG.F.PST ACC Dan
- c. #*dan mefucac me-ha-mexonit ha-xadaša šel ron.*  
 Dan blown.up.SG.M from-the-car.F the-new.SG.F of Ron
- d. #*dan pucac 'al-yedey ha-mexonit ha-xadaša šel ron.*  
 Dan be.blown.up.3SG.M.PST by the-car.F the-new.SG.F of Ron

I use Horvath & Siloni's (2019) definition of uniqueness (which pertains to idioms, but is extended here to semantic drifts as well, i.e., to special meanings in general), as defined in (5):

(5) **Uniqueness**

A special meaning is *unique* to a given diathesis  $\alpha$ , if  $\alpha$  does not share the meaning with its (existing) root counterpart  $\beta$ , which  $\alpha$  would most directly be related to by derivation. Specifically,

- a. A special meaning of a verbal passive/adjectival passive/unaccusative is *unique* if the same special meaning does not exist in the corresponding transitive alternant.
- b. A special meaning of a transitive is *unique* if the same special meaning does not exist in the corresponding (existing) unaccusative alternant.

The pairing of the different diatheses is based on derivational relations between them, which have been argued for in the literature. Verbal and adjectival passives have been commonly claimed

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<sup>8</sup> One might argue that the transitive version of 'was jealous', meaning 'caused to be jealous', is unavailable as a semantic drift for *pocec* 'blew up' because such a concept is absent from Modern Hebrew: The verb *le-kane* 'to be jealous' does not have a causative root counterpart. However, in Biblical Hebrew, such a causative version was available: *le-hakni*, which is translated by Hunerwadel (2019a: 138; 2019b: 136) as 'to cause to become jealous' (e.g., as marked in bold in (i) Deuteronomy 32:16 and (ii) Psalm 78:58).

- (i) *yakni'u- hu be-zarim, be-to'evot yax'isu- hu.*  
 make.jealous.3PL.PST-him in-strange.PL.M in-abominations make.angry.3PL.PST-him  
 'They **roused Him to jealousy** with strange gods, with abominations did they provoke Him.'
- (ii) *va- yax'isu- hu be-vamot-am, u- vi-fsiley-hem yakni'u- hu.*  
 and-make.angry.3PL.PST-him in- stages-their and-in-idols- their make.jealous.3PL.PST-him  
 'For they provoked Him with their high places, and **moved Him to jealousy** with their graven images.'

Moreover, the Modern Hebrew idiom in (iii), which means 'to be jealous', has a transitive version 'to cause to be jealous' (iv). Namely, the transitive concept itself is synchronically available in the language.

- (iii) *yac'u lo ha-'eyna'im.*  
 go.outside.3PL.PST him.DAT the-eyes  
 'He was jealous.' (lit. His eyes popped out.)
- (iv) *hoci lo et ha-'eyna'im*  
 take.out.3SG.M.PST him.DAT ACC the-eyes  
 'caused him to be jealous' (lit. took his eyes out)

Lastly, the transitive version exists in other languages, e.g., Amharic: *aqqänanna* 'to cause to be jealous of or spiteful towards one another' (Kane 1990: 779).

to be related to their transitive counterparts (see e.g. Jaeggli 1986; Baker et al. 1989; Collins 2005; Meltzer-Asscher 2012 for verbal passives, and Wasow 1977; Grimshaw 1990; Kratzer 2000; Horvath & Siloni 2008; Meltzer-Asscher 2011 for adjectival passives). Moreover, many researchers have argued that unaccusatives and their transitive counterparts are derivationally related (Grimshaw 1990; Harley 1995; Levin & Rappaport Hovav 1995; Pesetsky 1995; Marantz 1997; Reinhart 2002, 2016; Doron 2003; Chierchia 2004; Arad 2005; Collins 2005; Reinhart & Siloni 2005; Alexiadou & Schäfer 2006; Ramchand 2008; Horvath & Siloni 2008, 2011; Koontz-Garboden 2009; a.o.).

### 3 Preliminary pilot survey of semantic drift distribution

Before conducting the quantitative survey, I ran preliminary, informal searches, collecting semantic drifts belonging to four diatheses: transitives, unaccusatives, adjectival passives, and verbal passives. The data consisted of 30 adjectival passives, and 22 triplets of transitive-unaccusative-verbal passive counterparts.<sup>9</sup> The predicates collected in terms of the pilot survey are provided in Appendix 1, along with their unique and shared semantic drifts.

Diathesis classification was based on the pre-drifted meanings of the predicates, namely, the primal meanings. It was the initial diathesis that mattered since the idea was to detect which diatheses can drift, while the drifting process itself could result in a different diathesis than the one serving as its input (as will be elaborated in §4.1.2). Diatheses were classified as unaccusative (rather than unergative) if the following three diagnostics held: (i) They allowed strict verb-subject order, which determined their argument as internal (Shlonsky 1997; Siloni 2012; Meltzer-Asscher & Siloni 2012);<sup>10</sup> (ii) They licensed a possessive dative, which also determined their argument as internal (Borer & Grodzinsky 1986; Landau 1999); and (iii) They had a transitive alternant whose external thematic role was a CAUSE role (a role that brings about a change but is unspecified for mental state), which is considered a characteristic of unaccusative verbs (Reinhart 2002).

Adjectival passives were distinguished from verbal passives based on their morphological form: the *CaCuC* template is necessarily adjectival (21 of the 30 predicates met this criterion), as well as the results of three diagnostics (Horvath & Siloni 2008): Being licensed (i) in a copular construction in the future tense, (ii) as post-nominal modifiers, and (iii) after *nir'e/nir'a li* 'seems/seemed to me'. In contrast, verbal passives were determined based on the opposite results in the same three diagnostics (Horvath & Siloni 2008), i.e., they were unlicensed in copular constructions, as post-nominal modifiers, and after *nir'e/nir'a li* 'seems/seemed to me'. Moreover, all passives failing (i)–(iii) allowed a *by*-phrase, as expected from verbal passives (Grimshaw 1990).

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<sup>9</sup> More adjectival passives were collected since their searches were less limited, requiring only a transitive root counterpart, whereas for the verbal diatheses I searched for 3 related, morphologically-distinct root counterparts.

<sup>10</sup> Namely, these predicates allowed subject-verb inversion when no sentence-initial trigger was involved, as triggered inversion is possible with external arguments as well (Doron & Shlonsky 1992).



The preliminary survey revealed a discrepancy between transitives, unaccusatives, and adjectival passives on the one hand, and verbal passives on the other hand. As reported in **Table 1**, only the former, but not the latter, gave rise to unique semantic drifts, i.e., drifts that they did not share with their related root counterparts.<sup>11</sup> Each cell in the table indicates the number of predicates of a certain diathesis, which gave rise to unique drifts, out of the number of predicates that were sampled from each diathesis (percentages are provided in brackets).

Transitives	Unaccusatives	Adjectival Passives	Verbal Passives
8/22 (36.4%)	6/22 (27.3%)	19/30 (63.3%)	0/22 (0%)

**Table 1:** Hebrew unique semantic drifts across diatheses (pilot survey).

Examples (6)–(8) demonstrate unique drifts in each of the diatheses enabling them:<sup>12</sup>

- (6) A unique transitive semantic drift for the pair: *hevi* ‘brought’ (transitive (a)) – *ba* ‘came’ (unaccusative (b)):
- a. *ba- sof dana hevi’a xamiša yeladim.*  
in.the-end.M Dana bring.3SG.F.PST five.M children  
‘In the end Dana gave birth to five children.’
- b. *#ba- sof ba’u (la) xamiša yeladim.*  
in.the-end.M come.3PL.PST her.DAT five.M children
- (7) A unique unaccusative semantic drift for the pair: *nafal* ‘fell’ (unaccusative (a)) – *hipil* ‘dropped’ (transitive (b)):
- a. *hamon xayalim naflu mi-txilat ha-šana.*  
a.lot.of soldiers fall.3PL.PST from-beginning.F.of the-year.F  
‘Many soldiers have died in battle since the beginning of the year.’
- b. *#ha- ‘oyev hipil hamon xayalim.*  
the-enemy.M drop.3SG.M.PST a.lot.of soldiers
- (8) A unique adjectival passive semantic drift for the pair: *me’ušar* ‘confirmed’ (adjectival passive (a)) – *išer* ‘confirmed’ (transitive (b)):
- a. *dan haya mamaš me’ušar me- ha- matana.*  
Dan be.3SG.M.PST really confirmed.SG.M from-the-gift.F  
‘Dan was really happy about the gift.’

<sup>11</sup> Only drifts whose uniqueness could not be attributed to independent factors were included (see §4.1.2).

<sup>12</sup> For lack of space, the examples provided in this section are taken from the main study, but ample examples can be found in the pilot study as well.

- b. #*ha-matana* *mamaš* *išra* *et dan*.  
 the-gift.F really confirm.3SG.F.PST ACC Dan

All of the diatheses gave rise to semantic drifts they shared with their related root counterparts, as summarized in **Table 2**.

Unaccusative-Transitive	Adjectival Passive-Transitive	Verbal Passive-Transitive
14/22 (63.6%)	14/30 (46.7%)	7/22 <sup>13</sup> (31.8%)

**Table 2:** Hebrew shared semantic drifts between the different diatheses and their related root counterparts (pilot survey).

Examples of shared drifts are provided in (9)–(11):

- (9) A shared semantic drift for the pair *hoci* ‘took out’ (transitive (a)) – *yaca* ‘exited’ (unaccusative (b)):<sup>14</sup>
- a. *ha-re’ayon šel dan hoci* *’oto* *’idiot*.  
 the-interview.M of Dan take.out.3SG.M.PST him.ACC an.idiot.M  
 ‘Dan’s interview made him look like an idiot.’
- b. *dan yaca* *’idiot* *ba-re’ayon*.  
 Dan exit.3SG.M.PST an.idiot.M in.the-interview.M  
 ‘Dan looked like an idiot in the interview.’
- (10) A shared semantic drift for the pair *daxa* ‘rejected’ (transitive (a)) – *daxuy* ‘rejected’ (adjectival passive (b)):
- a. *dan daxa* *et ha-pgiša*.  
 Dan reject.3SG.M.PST ACC the-meeting.F  
 ‘Dan postponed the meeting.’
- b. *dan natan* *li* *ček* *daxuy*.  
 Dan give.3SG.M.PST me.DAT a.cheque.M rejected.SG.M  
 ‘Dan gave me a post-dated cheque.’

<sup>13</sup> 3 of the transitive predicates giving rise to unique drifts shared (at least one of) their new meaning(s) with the verbal passive, and 7 of the transitives sharing drifts with their unaccusative root counterparts also shared (at least one of) their new meaning(s) with their verbal passive root counterparts (see Appendix 1, §10). The numbers do not add up to 7 since there was some overlap between verbs giving rise to unique and shared drifts (cf. Appendix 1, §4–§5).

<sup>14</sup> The CAUSE role of the transitive alternant of the unaccusative can often be realized as an adjunct PP in the unaccusative construction (as in (9b)).

(11) A shared semantic drift for the pair ‘*ivrer* ‘ventilated’ (transitive (a)) – ‘*uvrar* ‘was ventilated’ (verbal passive (b)):

- a. *xašuv le-‘avrer ‘et ha-nose.*  
 important.SG.M to-ventilate ACC the-matter.M  
 ‘It’s important to discuss the matter openly.’
- b. *xašuv še-ha-nose ye‘uvrar.*  
 important.SG.M that-the-matter.M be.ventilated.3SG.M.FUT  
 ‘It’s important that the matter be discussed openly.’

The results of the preliminary survey confirmed Horvath & Siloni’s (2008) observation concerning the absence of verbal passive semantic drifts in Modern Hebrew, but a more systematic inspection of Hebrew semantic drifts was nevertheless called for. I opted for a quantitative survey of dictionaries, instead of relying on speakers’ judgments in this case, as the latter are tricky with regard to the (non-)existence of various alternants of semantic drifts (and idioms). Speakers are known to demonstrate considerable flexibility in this type of judgment, and might accept non-existent variants of drifts (and idioms) when first presented with them (for the purpose of judgment elicitation), although these variants have not been attested or used by them prior to this first encounter (Horvath & Siloni 2019). While this is a testimony of the speakers’ linguistic competence, which enables the creation of new variants of idioms and drifts naturally and spontaneously, it might impinge on the reliability of acceptability judgments as an experimental technique when investigating non-systematic (“accidental”) gaps in the distribution of special meanings across diatheses.

## 4 Quantitative survey of semantic drift distribution

### 4.1 Methods: Materials and procedure

#### 4.1.1 Semantic drift authentication

The quantitative survey inspected the random sample of 240 predicates (60 predicates per diathesis) used in Horvath & Siloni’s (2009) idiom study, compiled from Stern (1994). Having judged, as a native Hebrew speaker, which of the predicates had undergone semantic drift(s), and whether or not those drifts were unique,<sup>15</sup> I used several dictionaries to verify my judgments (mainly Rosenthal’s 2005, and Ben-Amotz & Ben-Yehuda’s 1972, 1982 slang dictionaries, but also Avneyon’s 1997 and Choueka’s 1997 dictionaries). The drifts that were not included in the dictionaries were authenticated via online Hebrew slang dictionaries, Hebrew linguistics

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<sup>15</sup> In some cases, predicates gave rise to more than one unique semantic drift (cf. the unaccusative *yaca* and the transitive *harag*; Appendix 2, §2 and §4, respectively). Nevertheless, given the emphasis of the paper on predicates’ *ability* to give rise to unique drifts, whether a predicate gave rise to a single unique drift, or five such drifts (the maximum amount documented in the current study), it was counted as a single drifted predicate.

blogs, and/or Google tests.<sup>16</sup> Concerning the latter, in order to avoid results involving non-drifted versions of the predicates at hand, searches were run on carefully-chosen word combinations meant to provide bias contexts eliciting the interpretation of the predicates in their drifted meanings. The relevant results were counted until several dozens of results were established as reliable and distinct from one another. The predicates inspected in the quantitative survey are provided in Appendix 2, along with their unique and shared drifts.

#### 4.1.2 True uniqueness

In conformity with the *uniqueness* definition ((5); see §2), unaccusative, adjectival passive, and verbal passive semantic drifts were considered unique if the new meaning was unavailable for their transitive alternants, while transitive drifts met the uniqueness requirement if they were unavailable for their unaccusative alternants.

In order to make sure the gaps in the distribution of semantic drifts indeed reflect fundamental characteristics of the relevant diatheses, only semantic drifts whose uniqueness could not be attributed to independent factors were included. Thus, in case a drift involved a change in argument structure, such that the root counterpart could not be derived from the new argument structure, the drift was not considered unique. For example, when a transitive verb “lost” its accusative object following the drift, the unaccusative counterpart could not be derived, as the transitive entry lacked the relevant internal argument. (12a) shows that the pre-drifted verb *hixnis* ‘inserted’ involves two objects: accusative (‘the eraser’) and dative (‘the pencil box’). However, (12b) demonstrates that one of its drifted versions has no accusative object that can become the subject of the unaccusative. This can explain why this drifted meaning is unavailable for the unaccusative counterpart of *hixnis*, *nixnas* ‘entered’, without resorting to inter-diathesis differences (e.g., (12c-d)).

- (12) a. *ha- talmid hixnis*                    *‘et ha- maxak la- kalmar.*  
 the-pupil.M insert.3SG.M.PST ACC the-eraser.M to.the-pencil-box  
 ‘The pupil put the eraser in the pencil box.’
- b. *ha- talmid hitxacef*                    *la- mora, ‘az hi hixnisa lo.*  
 the-pupil.M sass.3SG.M.PST DAT.the-teacher.F so she insert.3SG.F.PST him.DAT  
 ‘The pupil sassed the teacher, so she reprimanded him.’
- c. *#ha- talmid hitxacef*                    *la- mora, ‘az hu nixnas.*  
 the-pupil.M sass.3SG.M.PST DAT.the-teacher.F so he enter.3SG.M.PST
- d. *#ha- talmid hitxacef*                    *la- mora, ‘az nixnas lo.*  
 the-pupil.M sass.3SG.M.PST DAT.the-teacher.F so enter.3SG.M.PST him.DAT

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<sup>16</sup> Online sources included mainly the Milog Hebrew-Hebrew online dictionary (<https://milog.co.il/>), the Avneon Hebrew-Hebrew online dictionary (<https://www.milononline.net/>), the Hebrew Wiktionary known as the Wikimilon (<https://he.wiktionary.org>), the Dagesh Kal blog (<https://dagesh.wordpress.com/>), and the Ha-Zira Ha-Leshonit blog (<https://www.ruvik.co.il/>).

However, not all drifts involving a change in argument structure were excluded. When an unaccusative verb, such as *met* ‘died’ ((2a), repeated here as (13a), changed post-drifting from a one-place predicate into a two-place predicate ((2d), repeated here as (13b)), its transitive counterpart *hemit* could still, theoretically, share the same drift with a prepositional phrase (13c). Note that, in its primal meaning, the verb *met* did not require any specific preposition, while its drifted form requires the preposition ‘*al* ‘on’, and there is no reason why this preposition could not be added to the putative drifted version of the transitive *hemit*. Such changes in argument structure were thus included.

- (13) a. *ha-kelev šeli met.*  
 the-dog my die.3SG.M.PST  
 ‘My dog died.’
- b. *dan met            ‘al sara.*  
 Dan die.SG.M.PRS on Sarah  
 ‘Dan dotes on Sarah.’
- c. *#dan hemit            ‘oti    ‘al sara.*  
 Dan kill.3SG.M.PST me.ACC on Sarah

Other cases were excluded for semantic reasons. For instance, when an unaccusative such as *nafal* ‘fell’ (14a) gave rise to a drift involving a circumstantial meaning (14b), a transitive version would most probably be unavailable since it seems less likely that a causative verb will denote “incidental causality” (14c). That is, the fact that very few subjects would be appropriate with such a causative makes its formation implausible.

- (14) a. *ha- sefer    nafal            ‘al ha- ricpa.*  
 the-book.M fall.3SG.M.PST on the-floor.F  
 ‘The book fell on the floor.’
- b. *ha- xag            nafal            ‘al yom šabat.*  
 the-holiday.M fall.3SG.M.PST on day Saturday  
 ‘The holiday happened to take place (= fell) on a Saturday.’
- c. *#lu’ax            ha- šana    hipil            ‘et ha- xag            ‘al yom šabat.*  
 calendar.M.DEF.of the-year.F drop.3SG.M.PST ACC the-holiday.M on day Saturday

Moreover, when a drift involved a change in lexical category, it was excluded from the drift count. For instance, the adjectival passive *baduk* ‘checked’ (15a) has drifted into an adverb denoting emphasis/certainty (15b)<sup>17</sup>, and hence this drift was not included. Namely, only drifts giving rise to the same lexical category as that of the input were included (e.g., verbs whose drifted version remained a verb).

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<sup>17</sup> Note the post-drifting position of *baduk*, which also indicates the change in lexical category.

- (15) a. *ha-‘inyan baduk.*  
 the-matter.M checked.M.SG  
 ‘The matter is confirmed.’
- b. *baduk hu oved be-bank.*  
 checked.M.SG he work.M.SG.PRS in-a.bank  
 ‘It’s so obvious he works in a bank.’

## 4.2 Results

**Table 3** presents the results of the quantitative survey. Each cell indicates the number of predicates of a certain diathesis, which gave rise to unique drifts, out of the 60 predicates sampled from each diathesis (percentages are provided in brackets).<sup>18</sup>

Transitives	Unaccusatives	Adjectival Passives	Verbal Passives
13/60 (21.7%)	15/60 (25%)	15/60 (25%)	0/60 (0%)

**Table 3:** Hebrew unique semantic drifts across diatheses (quantitative survey).

The number of unique semantic drifts of verbal passives differed significantly from the number of transitive [ $\chi^2 = 12.423, p < .001$ ], unaccusative [ $\chi^2 = 14.933, p < .001$ ], and adjectival passive unique drifts [ $\chi^2 = 14.933, p < .001$ ]. On the other hand, the difference between unique unaccusative, transitive, and adjectival passive drifts was non-significant [ $\chi^2(2) = .244, p = .885$ ].

**Table 4** provides the number of shared drifts between the unaccusative, adjectival passive, and verbal passive diatheses, and their transitive root counterparts.<sup>19</sup>

Unaccusative-Transitive	Adjectival Passive-Transitive	Verbal Passive-Transitive
19/60 (31.7%)	8/60 (13.3%)	12/60 (20%)

**Table 4:** Hebrew shared semantic drifts between the different diatheses and their related root counterparts (quantitative survey).

<sup>18</sup> Some of the predicates giving rise to unique drifts also shared drifts with the relevant root counterparts: 9/15 (60%) of the uniquely-drifted unaccusatives, 7/13 (53.9%) of the uniquely-drifted transitives, and 3/15 (20%) of the uniquely-drifted adjectival passives. See Appendix 2, §9 for full details. These predicates are included as well since the ability to drift uniquely is of interest here.

<sup>19</sup> Predicates giving rise to both shared and unique drifts are included as well since the ability to share drifts is inspected.

The differences between shared unaccusative-transitive, adjectival passive-transitive, and verbal passive-transitive semantic drifts approached statistical significance [ $\chi^2(2) = 5.953, p = .051$ ]. Only the number of unaccusative-transitive shared drifts differed significantly from the number of adjectival passive-transitive shared drifts [ $\chi^2 = 4.779, p = .028$ ]. The number of verbal passive-transitive shared drifts differed significantly neither from that of unaccusative-transitive shared drifts [ $\chi^2 = 1.566, p = .211$ ], nor from that of adjectival passive-transitive shared drifts [ $\chi^2 = 0.54, p = .462$ ].

Finally, some of the transitives having a drifted version – spanning both unique and shared-with-unaccusative drifts – shared their drifts with the verbal passive counterparts (17/32 or 53.1%) and some of them did not (17/32 or 53.1%).<sup>20</sup>

### 4.3 Interim discussion

#### 4.3.1 Patterns of uniqueness

The results of the quantitative dictionary survey have shown that the same gap revealed in the distribution of idioms across diatheses in Hebrew (Horvath & Siloni 2009; 2019) and English (Fadlon et al. 2018; Horvath & Siloni 2019), was revealed in the distribution of Hebrew semantic drifts across diatheses. Unique drifts were attested in transitives, unaccusatives, and adjectival passives, but not in verbal passives.

A possible account for the absence of unique verbal passive drifts might have to do with the locality of special meanings. For example, Marantz (1997) argues that the domain of special meaning, and by extension of unique semantic drifts, is delimited by the external argument (introduced by the functional voice head known as little *v*), namely, the Agent. Thus, predicates with an external argument should be unable to give rise to unique drifts. This proposal can accommodate the finding that verbal passives cannot head unique drifts while unaccusatives can: The former bear an external argument (be it explicit or implicit) whereas the latter do not. However, the fact that transitives, which have an external argument, can give rise to unique drifts seems to contradict this proposal: The external argument (or functional little *v*) does not block drifts systematically.<sup>21</sup>

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<sup>20</sup> The numbers do not add up to 32 (or to 100%) since some of the transitive predicates included meanings that were shared with the verbal passive, alongside meanings that were not shared with it. 5 of the uniquely-drifted transitives and 12 of the transitives sharing drifts with unaccusatives shared at least one new meaning with the verbal passive root counterpart (see Appendix 2, §12).

As for the transitive drifts unshared with the verbal passive, 11 of the uniquely-drifted transitives and 10 of the transitives sharing drifts with unaccusatives did not share (at least one of) their new meanings with the verbal passive counterpart (see Appendix 2, §13). The numbers do not add up to 17 since some of the transitives gave rise to both unique and shared-with-unaccusative drifts, and were thus split into two drift lists, but were conflated under a single entry in the “unshared-with-verbal-passive” list.

<sup>21</sup> The locality account is further undermined by evidence recently provided by Rasin et al. (To appear), which seems to contradict the empirical evidence presented in Arad (2003) in favor of this view. Specifically, Rasin et al. (To appear) refute the claims that the input to syntactic composition is category-neutral roots and that the local domain (phase) of the root is the only domain exhibiting special meanings and phonological idiosyncrasies.

This contradiction can be resolved if the syntactic head blocking special meanings is assumed to be positioned higher than the Agent head, e.g., if it is the head responsible for verbal passive formation, à la Pylkkänen (2008) and Harley (2017). Nevertheless, such an account would still be inconsistent with the fact that clausal idioms (involving sentential functional material, see fn. 1) can be unique to the verbal passive (Horvath & Siloni 2019). The special meaning attributed to the clausal idioms in English (16a) and Hebrew (17a) clearly extends beyond the domain delimited by the verbal passive head, and the fact that it is unique to the verbal passive, casts even more doubt on any locality account along these lines.<sup>22</sup>

- (16) a. *What can't be cured must be endured.*  
 'If you can't do anything about a problem, you have to learn to live with it.'
- b. *#What you can't cure, you must endure.*
- (17) a. *hora'ot                    'ele/'elu nixtevu                    be-dam.*  
 instructions.F.DEF these be.written.3PL.PST in-blood.  
 'People paid a price/were injured/died in order for us to realize we should be careful and abide by these instructions.'
- b. *#katvu                    hora'ot                    'ele/'elu be-dam.*  
 write.3PL.PST instructions.F.DEF these in-blood.

The locality account thus falls short as far as the distribution of unique special meanings is concerned, but the limited distribution of Hebrew verbal passives, especially in spoken language (Berman 2008; Dekel 2014; Jisa et al. 2002), may affect the inventory of verbal passive drifts (and idioms; see Horvath & Siloni 2019). Given that the verbal passive is generally identified with a high register (e.g., Taube 2007 concerning impersonal passives; Halevy 2020), and that it is subject to more semantic and syntactic limitations compared to its equivalent in other languages (e.g., Meltzer-Asscher 2012), passive verbs – whether pre-drifted or drifted – should be relatively scarce in Hebrew speakers' productions. Thus, the low frequency of verbal passives might serve as an explanation for the lack of verbal passive unique semantic drifts, a direction examined in the corpus-based study (§5).

### 4.3.2 Patterns of sharing

The results of the quantitative dictionary survey further showed that all diatheses giving rise to unique drifts – transitives, unaccusatives, and adjectival passives – can share drifts with their

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<sup>22</sup> The fact that the verbal passive can head unique clausal idioms impinges neither upon the current results, nor upon Horvath & Siloni's (2009; 2019) and Fadlon et al.'s (2018) results. Rather, Horvath & Siloni (2017; 2019) provide an independently motivated account supporting the different storage of phrasal and clausal idioms, which allows for the latter, but not the former, to assume unique special meanings regardless of diathesis. See Horvath & Siloni (2017; 2019) for full details.



respective unaccusative and transitive root counterparts. They also revealed that verbal passives *must* share their drifts with their transitive counterparts.

Sharing of new meanings can be attributed to connections holding between root counterparts. Horvath & Siloni (2019) suggest that root-mate lexical entries are linked due to their derivational history. Such links facilitate sharing of drifts between root-mate lexical entries. Drift sharing is thus possible, but it is neither mandatory nor automatic, as evidenced by the existence of unique drifts.

The number of shared transitive-adjectival passive drifts (8/60 or 13.3%) was significantly lower than the number of shared transitive-unaccusative drifts (19/60 or 31.7%). This was also observed for phrasal idioms in Horvath & Siloni (2019): Only 5 of 60 adjectival passives (8.3%) shared idioms with their transitive counterparts, compared to 16 of 60 unaccusatives (26.7%). However, the preliminary pilot survey reported above did not reveal a similar discrepancy: 14 of the 30 adjectival passives (46.7%) and 14 of the 22 unaccusatives (63.6%) shared drifted meanings with their transitive counterparts.

The discrepancy between shared adjectival passives and shared unaccusatives, which was found in the idiom and drift studies, might have to do with the specific adjectival passives that were sampled. Since both studies inspected the exact same adjectival passives, and since this finding was not replicated in the preliminary survey, it might be the case that the discrepancy is coincidental and stems from the specific lexical items used in the quantitative surveys.

In contrast, if this discrepancy is representative, it is possible that sharing is less frequent when a change in category is involved (i.e., adjective/verb). Indeed, English speakers' judgments concerning the likelihood of unaccusatives and adjectival passives to share idioms with their transitive counterparts undergirds this proposal, with unaccusative-transitive shared idioms being judged as likelier than adjectival passive-transitive shared idioms (Fadlon et al. 2018). However, the Hebrew speakers inspected in the same study did not reveal any differences between the two diatheses' likelihood to share idioms with their transitive counterparts.

Another possible explanation concerns frequency. If adjectival passives are less frequent than unaccusatives, it might be the case that their lower frequency hinders drift sharing. The corpus-based study reported in the following section will test the validity of such an account. This study will also attempt to explain why not all drifted transitives share their drifts with their verbal passive counterparts (18), while all verbal passive drifts are shared with their transitive alternants.

- (18) a. *dan hoci*                                      *šiv'im ba- mivxan.*  
 Dan take.out.3SG.M.PST seventy in.the-test.M  
 'Dan got 70 on the test.'
- b. *#huca*    *šiv'im ba- mivxan ('al-yedey dan).*  
 be.taken.out.3SG.PST seventy in.the-test.M by                      Dan

## 5 Corpus-based study of predicate frequency

### 5.1 Methods: Materials and procedure

In order to test the validity of the frequency-based account vis-à-vis the distribution of both unique and shared semantic drifts, a corpus-based study checked the approximate lemma frequencies of all predicates under examination in Linzen's (2009) corpus of blog postings (a 165-million-word corpus). Frequencies were collected for orthographic forms, regardless of the meaning used (i.e., both drifted – either unique or shared – and non-drifted versions of the predicates were included in the count). The observed frequencies of the various orthographic forms of each predicate were totaled, spanning different tenses, persons, genders, and numbers (e.g., the frequency of the verb *yaca* 'exit.3SG.M.PST' includes the frequencies of the inflected forms *yac'a* 'exit.3SG.F.PST' and *yac'u* 'exit.3PL.PST', as well as the frequencies of the first- and second-person forms, in future and present tenses, along with forms including orthographically-bound elements such as the conjunction *ve-* 'and' and the complementizer *še-* 'that'). When a word could be spelled in more than one way (e.g., with and without vowel letters), all possible spellings were included. Infinitival forms were excluded from the frequency check, as adjectival passives rarely appear in infinitival clauses in Hebrew, and verbal passives lack an infinitive form. Lastly, when an orthographic form could be construed as a different word, it was excluded from the count.

### 5.2 Results

**Table 5** summarizes the results of the frequency corpus-based study, presenting the mean frequencies and standard deviations of predicates that gave rise to semantic drifts (unique, shared, or both), and predicates that did not.<sup>23</sup> Moreover, the predicates giving rise to drifts are divided by drift type: unique/shared.<sup>24</sup>

A two-way ANOVA involving 2 between-item factors: DIATHESIS (4 levels: *Transitive*, *Unaccusative*, *Adjectival Passive*, *Verbal Passive*) and DRIFTING (2 levels: *Drifted*, *Non-Drifted*) was conducted. DIATHESIS emerged as significant [ $F(3,200) = 9.219$ ,  $p < .001$ ], indicating that the different diatheses differed in frequency. Bonferroni-corrected pairwise comparisons revealed that unaccusatives were significantly more frequent than all other diatheses: transitives [ $p = .004$ ], adjectival passives [ $p < .001$ ], and verbal passives [ $p < .001$ ]. DRIFTING also reached significance [ $F(1,200) = 5.219$ ,  $p = .023$ ], indicating that predicates having a drifted version were significantly more frequent than non-drifted predicates, regardless of diathesis.

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<sup>23</sup> Predicates demonstrating morphological syncretism with one of their root counterparts were excluded as their frequency would stand for the frequencies of more than one lexical item. These constituted 32 of the 240 predicates: 10 transitives, 10 unaccusatives, 9 adjectival passives, and 3 verbal passives. Thus, the corpus-based study involved a total of 208 predicates: 50 transitives, 50 unaccusatives, 51 adjectival passives, and 57 verbal passives.

<sup>24</sup> Predicates giving rise to both unique and shared drifts were included in both the unique-drift and shared-drift counts.

		<b>Transitives</b>	<b>Unaccusatives</b>	<b>Adjectival Passives</b>	<b>Verbal Passives</b>	<b>Sum/ Average<sup>25</sup></b>
<b>Drifts</b>	Quantity (%)	25/50 (50%)	24/50 (48%)	20/51 (39.2%)	11/57 (19.3%)	80/208 (38.5%)
	Mean Frequency (SD)	66.5 (99.6)	267.5 (430.3)	23.1 (42.7)	9.2 (7.8)	108.1 (262.4)
<b>Unique</b>	Quantity (%)	13/50 (26%)	15/50 (30%)	15/51 (29.4%)	0/57 (0%)	43/208 (20.7%)
	Mean Frequency (SD)	102.2 (123)	434.7 (504.4)	29.4 (48.1)	N/A	187 (343.8)
<b>Shared</b>	Quantity (%)	19/50 (38%)	18/50 (36%)	8/51 (15.7%)	11/57 (19.3%)	56/208 (26.9%)
	Mean Frequency (SD)	44.3 (58.6)	216.4 (344.1)	8.4 (7.5)	9.2 (7.8)	87.6 (214.4)
<b>No Drifts</b>	Quantity (%)	25/50 (50%)	26/50 (52%)	31/51 (60.8%)	46/57 (80.7%)	128/208 (61.5%)
	Mean Frequency (SD)	36.3 (77.5)	78.3 (217.8)	13.2 (35)	4.7 (8.5)	27.9 (107.6)

**Table 5:** Mean frequencies (per million words) and standard deviations of predicates having a unique and/or shared drifted version and of non-drifted predicates, across diatheses.  
*Note.* *SD* = standard deviation; *N/A* = not available.

The DIATHESIS\*DRIFTING interaction turned out significant as well [ $F(3,200) = 3.125, p = .027$ ], indicating that frequency affected drifting differently in the various diatheses. Independent-samples *t*-tests comparing drifted and non-drifted predicates in each of the diatheses indicated that drifted predicates were marginally significantly more frequent than non-drifted ones in unaccusatives [ $t(48) = 1.937, p = .061$ ], while frequency did not distinguish between drifted and non-drifted transitives [ $t(48) = 1.196, p = .238$ ], adjectival passives [ $t(49) = .911, p = .367$ ], and verbal passives [ $t(55) = 1.602, p = .115$ ]. Namely, the role of frequency in predicates' ability to drift – whether uniquely or not – proved inconsistent.

An additional two-way ANOVA involving 2 between-item factors: UNIQUELY-DRIFTED diathesis (3 levels: *Transitive*, *Unaccusative*, *Adjectival Passive*) and DRIFT TYPE (3 levels: *Unique*, *Shared*,

<sup>25</sup> This column provides the sums of predicate quantities and the average scores of mean frequencies and standard deviations.

*None*) was conducted. UNIQUELY-DRIFTED DIATHESIS emerged as significant [ $F(2,160) = 16.479$ ,  $p < .001$ ], indicating again that the different diatheses differed in frequency. DRIFT TYPE also reached significance [ $F(2,160) = 6.782$ ,  $p = .001$ ], indicating that the various drift types differed in frequency. Bonferroni-corrected pairwise comparisons revealed that predicates giving rise to unique drifts were significantly more frequent than non-drifted predicates [ $p < .001$ ].

The interaction between UNIQUELY-DRIFTED DIATHESIS and DRIFT TYPE turned out significant as well [ $F(4,160) = 3.64$ ,  $p = .007$ ], indicating that frequency affected drift types differently in the various diatheses. One-way ANOVAs for each of the 3 diatheses involved in unique drifting revealed a significant effect for DRIFT TYPE only in unaccusatives [ $F(2) = 4.894$ ,  $p = .011$ ], but not in transitives [ $F(2) = 2.768$ ,  $p = .072$ ] or adjectival passives [ $F(2) = 1.23$ ,  $p = .301$ ]. Bonferroni-corrected pairwise comparisons revealed significant differences only between uniquely-drifted and non-drifted unaccusatives [ $p = .008$ ]. Namely, the role of frequency in predicates' ability to drift uniquely proved inconsistent as well.

**Table 6** summarizes the mean frequencies and standard deviations of the verbal passives that shared and did not share the new meaning(s) of their transitive counterparts which gave rise to (unique and/or shared-with-unaccusative) drifts.<sup>26</sup>

	Shared	Unshared
Quantity (%)	14/32 (43.8%)	10/32 (31.3%)
Mean Frequency (SD)	4.4 (8.1)	2.5 (2.7)

**Table 6:** Mean frequencies (per million words) and standard deviations of verbal passives sharing and not sharing their transitive counterparts' drifts.

*Note.* *SD* = standard deviation.

An independent-samples *t*-test comparing verbal passives sharing and not sharing their transitive counterparts' drifts revealed no significant difference between the frequency of the two sets of verbal passives [ $t(22) = .696$ ,  $p = .494$ ].

## 5.3 Interim discussion

### 5.3.1 Patterns of uniqueness

The corpus-based study attempted to attribute the lack of verbal passive unique semantic drifts to the low frequency of verbal passives. Nevertheless, the findings seem to undermine this attempt.

<sup>26</sup> 8 verbal passives sharing their orthographic form with other diatheses were excluded from the count: 3 shared their transitive counterparts' drifts and 5 did not.

First, while the overall frequency of verbal passives (whether drifted or not) was lower than that of all other diatheses, the difference was statistically significant only when compared to the unaccusative diathesis, which was significantly more frequent than the other two diatheses as well.

Second, frequency failed to predict unique drifting. In two of the three diatheses giving rise to unique drifts – transitives and adjectival passives – uniquely-drifted predicates differed neither from non-drifted predicates nor from predicates giving rise to shared drifts. As for the unaccusative diathesis, uniquely-drifted predicates differed only from non-drifted predicates, but not from predicates giving rise to shared drifts.<sup>27</sup> Thus, the hypothesis that increased frequency is associated with semantic change (e.g., Feltgen et al. 2017) does not seem to hold consistently in the current study, as it appears to be true only for unaccusative unique drifts.

Moreover, the frequency of non-drifted verbal passives sometimes exceeded that of uniquely-drifted predicates from other diatheses. Thus, the non-drifted verbal passive *hitgala* ‘was discovered’ (46.9) was more frequent than the uniquely-drifted unaccusative *hithapex* ‘turned over’ (28.4), the uniquely-drifted transitive *pocec* ‘blew up’ (3.8), and the uniquely-drifted adjectival passive *davuk* ‘glued’ (2.5). An additional piece of evidence concerning the inability of frequency to predict unique drifting can be seen in the differences observed in the mean frequency of uniquely-drifted adjectival passives (29.4) and non-drifted transitives (36.3) and unaccusatives (78.3), as the former proves lower than the latter two.

Furthermore, the same discrepancy found in Hebrew between verbal passives on the one hand, and transitives, unaccusatives, and adjectival passives on the other hand, was found with regard to phrasal idioms in English, where the verbal passive is used extensively (Horvath & Siloni 2017; Fadlon et al. 2018). Hence, the complete lack of unique verbal passive drifts (and idioms) is beyond what one would expect based on frequency alone.

### 5.3.2 Patterns of sharing

The corpus-based study further attempted to use frequency to account for the discrepancies found concerning drift sharing: (i) adjectival passives shared significantly less drifts with their root counterparts than unaccusatives, and (ii) not all transitives having drifted versions shared their new meaning(s) with their verbal passive counterparts (while all drifted verbal passives shared their drifts with their transitive counterparts). However, these attempts did not bear fruit either.

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<sup>27</sup> Note that the fact that uniquely-drifted predicates did not differ in frequency from predicates sharing their drifts, in any of the uniquely-drifted diatheses, undermines an argument proposed by an anonymous reviewer concerning verbal passives simply being below a necessary frequency threshold for unique drifting. If verbal passives do give rise to shared drifts, and frequency cannot tease apart shared drifts from unique ones, then frequency cannot explain why verbal passives can give rise to shared drifts, but not unique ones.

First, frequency failed to predict drifting in general – whether unique, shared, or both – in three of the four diatheses under inspection: transitives, adjectival passives, and verbal passives. Although drifted predicates were generally more frequent than non-drifted ones, the difference in frequency was significant only concerning the unaccusative diathesis. As for the latter, predicates giving rise to shared drifts did not differ in frequency from non-drifted predicates, and this held for all other diatheses under inspection.

Second, while the lower frequency of adjectival passives, compared to that of unaccusatives, might be argued to hinder drift/idiom sharing with related lexical items, the fact that this low frequency does not hinder unique drifts/idioms is unexpected. Moreover, on a par with adjectival passives, verbal passives are less frequent than unaccusatives as well, but sharing does not differ between verbal passives and unaccusatives. This solution is thus rendered ad-hoc, as frequency seems to affect special meanings only when they are shared, and even then, only when specific diatheses are involved.

Further, frequency failed to predict which verbal passives would share their transitive counterparts' drifted meanings. First, the non-significant difference between the frequencies of verbal passives sharing and not sharing their transitives' drifts provides no evidence that frequency can tease apart the shared and unshared passives. Second, the fact that the same verbal passive could share a certain meaning of a given predicate, but not the other, indicates that frequency does not regulate drift sharing. A frequency-based account would predict a given frequency to either enable or disallow all new meanings of a transitive counterpart (*ceteris paribus*), contrary to fact.<sup>28</sup>

Finally, the mere detection of 28 drifted verbal passives out of 91 verbal passives (30.8%) seems highly improbable under a frequency-based account.<sup>29</sup> The generally low frequency of the verbal passive in spoken language, as reported even for “passive-friendly” languages like English (Biber et al. 1999), the still lower frequency of the verbal passive in Hebrew (Berman 2008; Dekel 2014; Jisa et al. 2002), and the fact that the authentication of the various drifts was performed via dictionaries and Google searches, i.e., using written language, which is a less natural environment for drifting, all create the impression that passive drifts should be

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<sup>28</sup> An anonymous reviewer argues that a frequency-based account could also rely on the relative frequency of the different meanings of the transitive counterpart when determining which verbal passive would share its transitive counterpart's drift. However, some of the examples involved in the current study provide evidence against such an account. E.g., the verb *harag* 'killed' gives rise to several unique drifts, only one of which is shared with the verbal passive *neherag* 'was killed': 'destroyed'. A Google search on the transitive form reveals that the meanings unshared with the verbal passive are actually more frequent than the one shared with it (several hundreds/thousands versus several dozens of results).

<sup>29</sup> 12 of the 60 verbal passives sampled proved capable of drifting, and 17 additional verbal passives shared drifts with 17 of the 32 drifted transitives. One of the verbal passive predicates appeared in both lists, thus totaling 28 predicates.

impossible to find in Hebrew, contrary to fact. Processes of semantic change thus must be the result of several factors working in concert, only one of which is frequency, as has been argued by e.g. Wijaya & Yeniterzi (2011).<sup>30</sup>

## 6 General discussion

### 6.1 Patterns of uniqueness

Since both attempts to account for the lack of verbal passive unique drifts – locality and frequency – fall short, I opt for an account based on the requirement that semantic drifts be lexically listed. Behind this requirement lies the assumption that, in order for an item to acquire a special meaning, it has to be a lexical entry, as otherwise this meaning cannot be straightforwardly listed in the lexicon and retrieved when needed (in line with Chomsky 1970; Wasow 1977; Dubinsky & Simango 1996; Horvath & Siloni 2008; i.a.). Two options come to mind concerning drift listing: Subentry storage and independent storage. Under the former, drifts are registered as a subentry of the original meaning, or of some unspecified core meaning dominating both (e.g., Frazier & Rayner 1990; Williams 1992; Pickering & Frisson 2001; Lopukhina et al. 2018).<sup>31</sup> Under the latter, drifts constitute independent entries that are listed separately from the original meaning (e.g., Forster & Bednall 1976; Kempson 1977; Foraker & Murphy 2012; Shen & Li 2016).<sup>32</sup>

I propose a combination of the two, arguing that drifts are initially listed as subentries of the original meaning (i.e., the input to the drifting process). This is supported by the fact that novel drifted meanings are often perceived as metaphoric extensions of the original meaning before becoming conventionalized (e.g., Cruse & Croft 2004). Moreover, speakers are initially aware of the various meanings of a certain word, connecting between these meanings (Antilla 1989). These two aspects are thus coherent with a hierarchical listing. However, once drifts “stabilize” and become substantially more frequent compared to the original meaning, they head their own lexical entry (as suggested, for instance, by Kawamoto 1993). Cases where the new meaning “takes over” the original one, which is rendered outdated and is preserved in frozen expressions or very limited contexts, cohere with separate listing (see example (1) above and the preceding discussion).

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<sup>30</sup> Some argue that higher-frequency words are less susceptible to semantic change (e.g., Hamilton et al. 2016). The current study seems to contradict this claim, as predicates having a (uniquely-)drifted version prove more frequent than non-drifted predicates (although the current study does not take pre-drifted polysemy into account).

<sup>31</sup> Williams (1992) and Lopukhina et al. (2018) test polysemous words, while Frazier & Rayner (1990) and Pickering & Frisson (2001) compare polysemous and homonymic words. Lopukhina et al. (2018) distinguish between different lexical categories, arguing that nominal and verbal literal and metonymic senses are stored together, while their metaphorical senses are stored separately. They argue that all three senses are stored together for adjectives.

<sup>32</sup> Foraker & Murphy (2012) test polysemous words, Shen & Li (2016) investigate both polysemous and homonymic words, and Forster & Bednall (1976) and Kempson (1977) do not make this distinction.

Indeed, the data reported in Forster & Bednall (1976) point in that direction.<sup>33</sup> They report the results of an ambiguity decision task, in which participants had to determine the ambiguity (or lack thereof) of ambiguous words, unambiguous words, and orthographically-legal nonwords. Two sets of ambiguous words were compiled: (i) words whose two meanings had equal rated frequency, and were equally often perceived as prominent (e.g., *bark*), and (ii) words whose two meanings demonstrated a large difference in rated frequencies, and where one meaning was perceived as prominent more often than another (e.g., *bridge*).<sup>34</sup> Forster & Bednall do not divide the sets of ambiguous items into subtypes, nor do they provide the meanings they determine for ambiguous items, but, perusing their materials, most of the items (60%-80%) prove ambiguous between (at least) two different lexical categories, i.e., noun/verb, noun/adjective, or adjective/verb, while the rest demonstrate same-category ambiguity, i.e., noun/noun or verb/verb. Although they do not inspect only same-category ambiguities, their results provide us with some insight concerning the storage of ambiguous words.<sup>35</sup>

Forster & Bednall report two findings relevant to our discussion. First, unambiguous words take longer to categorize as such than ambiguous ones. Second, frequency and prominence differences between an ambiguous word's meanings do not affect the time it takes to categorize this word as ambiguous. They note that these findings are incompatible. The first finding supports independent storage, since the longer classification of unambiguous words suggests an *exhaustive* search: After encountering the sole entry, the search continues looking for an additional one until failure. In contrast, the second finding supports subentry storage: If the second meaning is anyway listed as a subentry of the first entry, the search should terminate upon the encounter of the first entry, and frequency/prominence differences are not expected to affect categorization time.

These seemingly contradictory findings nevertheless dovetail neatly with each other under my proposal. Recall that I opt for subentry storage as long as the drift is less frequent than – or equally frequent to – the original entry, and speakers automatically relate the two. Such ambiguities are thus expected to generate a terminating search in an ambiguity decision task. If, however, the drift “overshadows” the original entry, with the latter becoming substantially

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<sup>33</sup> The literature dealing with behavioral studies inspecting the retrieval of ambiguous words is vast and varied. I discuss one specific study here, but see the studies mentioned above and references within for a more comprehensive view.

<sup>34</sup> Ambiguous items were chosen based on students' rated frequencies for each of the meanings of ambiguous words on a 10-point scale, as well as on (other) students' intuitions concerning the more prominent meaning of these words. Unambiguous words of known frequency were also rated in order to verify the rating accuracy concerning ambiguous words.

<sup>35</sup> They further report no difference between retrieval of verbs and nouns in another experiment, a finding replicated in Foraker & Murphy (2012) and Lopukhina et al. (2018). Nevertheless, other studies do find noun-verb disparities (e.g., Pickering & Frisson 2001).



less frequent and even obsolete, the drift cuts loose from the original entry and is stored independently.<sup>36</sup> This proposal predicts that in the case of unambiguous words, the search would continue even after it detects the first (and only) entry because although no subentries are detected, the searched word may still have an additional, independently-stored lexical entry. Such an exhaustive search is indeed reported for unambiguous words in Forster & Bednall's study. Thus, I suggest that the findings supporting subentry storage for ambiguous items and independent storage for unambiguous items are not contradictory, since both storage types coexist in the lexical component.

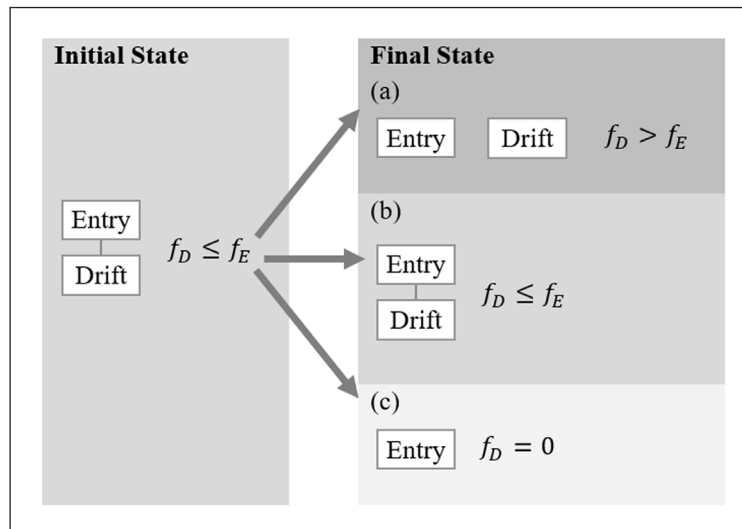
I argue that the ambiguous items used in Forster & Bednall (1976) fit the profile of subentry storage. Some of the items resemble the case of drifts in their initial state, as only one meaning is dominant (e.g., *bridge*),<sup>37</sup> while other items demonstrate a state of equilibrium between the two meanings: One meaning is still prominent, but the other meaning has caught up with it (e.g., *bark*). It is still not a scenario in which the drift exceeds the original meaning in frequency. Therefore, there is no reason for the drift to detach from the initial meaning at this point, and it should be kept as its subentry. Three possibilities arise for such drifts, as demonstrated in **Figure 1**. For one, they can keep gaining more and more frequency and dissociate from their original meanings, resulting in separate listing for the two entries (a). They can also stagnate at this point, remaining equally probable as their original meanings, and still be listed as their subentries (b). Lastly, they can decrease in frequency (as often happens with slang terms) until they disappear, in which case they would be expected to remain stored under the original entry (b), until they are “deleted” if no longer used (c).

I can now explain the results of the quantitative survey along lines proposed by Horvath & Siloni (2009, 2019) regarding the distribution of phrasal idioms. If drifts are initially stored as subentries of the input entries, it follows that the input for drifting must be a lexical entry itself, in order for the drift to be added as its subentry. Transitives, unaccusatives, and adjectival passives can assume unique new meanings; hence, they must be lexically listed, thus allowing for

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<sup>36</sup> An anonymous reviewer notes that the transition from subentry to independent storage could be contingent upon the transparency of the relation between the original entry and the drifted one. However, Forster & Bednall (1976) do not control for this transparency and a terminating search (subentry storage) is attested for words greatly varying in the transparency between their two meanings. For example, the word *bark* demonstrates a transparent relation between the two meanings ('the sound a dog makes' and 'to cry like a dog'), whereas the word *temple* demonstrates an opaque inter-meaning relation ('a religious edifice' and 'the side of the forehead'), but both demonstrate a terminating search. Note that these words' meanings have equal rated frequency, and are equally often perceived as prominent, indicating that an opaque relation between an ambiguous word's meanings does not necessarily correlate with different frequencies for these meanings.

<sup>37</sup> Forster & Bednall (1976: 54) only note that in these cases there is “a large difference in the rated frequencies of the two meanings”, but do not specify what constitutes “a large difference”. I propose that in order for an exhaustive search (and independent storage) to surface, the difference in frequency between the two meanings should be *larger* than the one tested by Forster & Bednall, but the question of ‘how much larger?’ is yet to be answered.



**Figure 1:** Initial and final states of drift storage in the lexicon.  
 Note.  $f$  = frequency;  $D$  = drift;  $E$  = entry.

subentries. By the same logic, unique verbal passive semantic drifts are impossible since verbal passives do not constitute lexical entries.

Indeed, transitives have been argued to constitute lexical entries on independent grounds (Chierchia 2004, Horvath & Siloni 2011, Meltzer-Asscher 2011, Reinhart 2002), and both unaccusatives (Chierchia 2004; Horvath & Siloni 2011; Levin & Rappaport Hovav 1995; Koontz-Garboden 2009; Reinhart 2002) and adjectival passives (Horvath & Siloni 2008; Levin & Rappaport 1986; Meltzer-Asscher 2011) have been argued to be derived and listed in the lexicon. Being lexical entries, they can assume new meanings specific to them.

In contrast, it is widely accepted in the literature that the verbal passive is derived post-lexically (e.g., Wasow 1977; Baker, Johnson & Roberts 1989; Reinhart 2002; Siloni 2002; Collins 2005; Reinhart & Siloni 2005; Horvath & Siloni 2008; Meltzer-Asscher 2011, 2012; a.o.). As such, it is not listed in the lexicon and cannot assume a new meaning independent of its transitive (active) counterpart. The new meaning cannot be stored in the lexicon as related to the verbal passive, as it is not listed there to begin with. Thus, the verbal passive must share drifts with its transitive alternant. This is straightforwardly explained if the drift is listed under the lexical entry representing its transitive, and post-lexical passivization of the drifted transitive gives rise to the drifted verbal passive version.

The findings presented in this paper thus cast doubt on approaches arguing that the syntactic component is the only generative (operative) component (Marantz 1997; Borer 2005; Pytkänen 2008; Ramchand 2008; i.a.). It follows from the argumentation presented above that the lexicon

involves valence-changing operations: If only lexical entries can give rise to unique semantic drifts, then transitives, unaccusatives, and adjectival passives must be lexical entries. Further, if transitives, unaccusatives, and adjectival passives are lexical entries, the operations generating these diatheses are bound to take place in the lexicon, which means it is an active component of the grammar.<sup>38</sup>

## 6.2 Patterns of sharing

While frequency was able to account for the finding that adjectival passives shared significantly less drifts than unaccusatives, such an account seemed ad-hoc and was not adopted. Moreover, frequency failed to account for the finding that not all transitives having drifted versions shared their new meaning(s) with the verbal passive. Concerning the former, the accounts proposed above (§4.3.2) still hold under the lexical storage-based account: The discrepancy between shared adjectival passives and shared unaccusatives might have to do with the specific adjectival passives sampled, or it might be attributed to the lower likelihood of drift sharing across lexical categories. Neither of these accounts impinges upon the proposal that in order for a drift to be shared, it has to be listed as a subentry of the relevant lexically-stored alternant, or as a subentry of the lexical entry from which the alternant is derived in the case of post-lexical derivation. As for verbal passives, the assumption that transitives are lexically listed while verbal passives are derived from them post-lexically (see §6.1) predicts all drifts headed by transitives to be available to their passive counterparts, unless blocked by independent factors. Indeed, I argue that all cases where transitive-verbal passive drift sharing was blocked are due to independent factors.

First, the majority of the transitive drifts unshared with their verbal passive counterparts (both unique and shared-with-unaccusative; 15/17 or 88.2%) would be considered as (vulgar) slang, and would only be used in highly informal contexts (see e.g. (19a)). As such, the likelihood of finding their colloquial meaning in the verbal passive, which is usually characteristic of written, formal registers, decreases significantly. Indeed, all of the colloquial transitive drifts proved unable to appear in the verbal passive (see (19b), along with the drifts marked in bold in Appendix 2, §13). This is strengthened by the fact that all verbal passive drifts can appear in formal contexts (see (19c) and Appendix 2, §11).

- (19) a. *ha- ben'adam pašut horid li stira.*  
 the-person.M simply lower.3SG.M.PST me.DAT a.slap.F  
 'This guy just slapped me (in the face).'

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<sup>38</sup> Note that if the lexicon consisted of roots alone, drifts would be listed as subentries of the root, and would therefore be expected to be available to the various diatheses that the root gives rise to, unless ruled out by some independent factor. This is clearly not the case.

- b. #*pit'om hurda li stira.*  
suddenly be.lowered.3SG.F.PST me.DAT a.slap.F
- c. *gubša tyuta rišonit la- heskem.*  
be.consolidated.3SG.F.PST a.draft.F initial.SG.F for.the-agreement.M  
'An initial draft of the agreement was finalized.'

As for the remaining non-colloquial transitive drifts unshared with the verbal passive (*hoci* 'took out', drifted meaning 'sprouted'; *he'emid* 'positioned', drifted meaning 'created/produced'), those are limited, selecting only indefinite complements post-drifting (compare (20a-b)). While not entirely ungrammatical, indefinites often sound anomalous in subject position of passive sentences (Svartvik 1966). Ruwet (1991: 244) further argues that "an indefinite NP is acceptable only under quite special conditions as the subject of a passive, or as a subject in general". This property can account for the absence of a passive version for these drifts (20c), and can further explain the lack of drifted verbal passives for some of the colloquial drifts (totaling 6 or 35.3% of the 17 unshared-with-passive transitive drifts; see Appendix 2, §14).

- 20 a. *ha- si'ax lo moci praxim.*  
the-bush.M NEG take.out.SG.M.PRS flowers.M  
'This bush doesn't grow (sprout) flowers.'
- b. #*ha- si'ax lo moci et ha- perax.*  
the-shrub.M NEG take.out.SG.M.PRS ACC the-flower.M
- c. #*praxim lo huc'u me- ha- si'ax*  
flowers.M NEG be.taken.out.3PL.M.PST from-the-shrub.M

An additional factor blocking active-passive drift sharing concerns non-agentive Object-Experiencer verbs, which are argued by Landau (2002) to reject passivization in Hebrew (see also Meltzer-Asscher 2012). Indeed, a substantial part of the transitive drifts unshared with the verbal passive (12/17 or 70.6%) qualify as such (see e.g. (21a-b) and Appendix 2, §15).

- (21) a. *al tadliki oti al ha-boker!*  
NEG.IMP light.2SG.F.IMP me.ACC on the-morning.M  
'Don't piss me off first thing in the morning!'
- b. #*hi hudleka (al-yedey dan) al ha-boker.*  
she be.lit.3SG.F.PST by Dan on the-morning.M

Similarly, a small subset of the unshared-with-passive drifts (2/17 or 11.8%) includes verbs whose drifted concepts are not used in the passive even though their passive forms are prosodically possible (compare the drift in (22a-b) with its drifted concept in (22c-d); see also Appendix 2, §16).

- (22) a. *ha- calaf horid šloša mexablim ba-mivca.*  
 the-sniper.M lower.3SG.M.PST three.M terrorists.M in.the-operation.M  
 ‘The sniper shot down three terrorists during the operation.’
- b. *#šloša mexablim hurdu ba-mivca (al-yedy ha- calaf).*  
 three.M terrorists.M be.lowered.3PL.PST in.the-operation.M by the-sniper.M
- c. *ha- koxot calfu al ha- xayalim šelanu.*  
 the-forces.M snipe.3PL.PST on the-soldiers.M our  
 ‘The forces shot at our soldiers.’
- d. *#ha- xayalim šelanu niclefu (al-yedy ha- koxot).*  
 the-soldiers.M our be.sniped.3PL.PST by the-forces.M

Another subset of the unshared-with-passive drifts includes measure verbs (2/17 or 11.8%; cf. (18), above, repeated below as (23), and Appendix 2, §17). Jackendoff (1972) contends that verbs denoting “the value of some attribute of an entity” (Levin 1993: 272; e.g., *weigh*, *cost*, etc.), cannot be passivized (see also Adger 1994).

- (23) a. *dan hoci šiv'im ba- mivxan.*  
 Dan take.out.3SG.M.PST seventy in.the-test.M  
 ‘Dan got 70 on the test.’
- b. *#huca šiv'im ba- mivxan ('al-yedey dan).*  
 be.taken.out.3SG.PST seventy in.the-test.M by Dan

Lastly, a small subset of the colloquial transitive drifts unshared with the verbal passive (3/17 or 17.6%) are relatively new developments, as attested by the small number of search results returned by Google (see (24), along with Appendix 2, §18). As such, they are more likely to be attested almost exclusively in spoken language. These drifts are predicted to become available to their verbal passive counterparts once their frequency in written language increases, given that the passive is identified with the written register.

- (24) a. *eyze ra'ayon hevet po!*  
 what an.idea.M bring.2SG.F.PST here  
 ‘You came up with quite an idea there!’
- b. *#eyze ra'ayon huva po!*  
 what an.idea.M be.brought.3SG.M.PST here

To recap, the absolute majority of transitive drifts unshared with their verbal passive counterparts belongs to a low, informal – at times vulgar – register, which appears to clash with the more formal nature of the verbal passive. Moreover, I have enumerated additional properties of the drifted transitives that are expected to block passivization. It thus still holds that transitive

drifts should, in principle, be available to their verbal passive counterparts, unless passivization is blocked for independent reasons.

### 6.3 Possible counterexamples

I now turn to discuss cases argued to constitute unique verbal passive semantic drifts, thus serving as possible counterexamples to the results reported above. Postal (1986: 138) provides two such examples, where he claims that passivization is “obligatory”, namely, the transitive counterpart is unavailable. The first involves the verb *want* ((22ia-b) *ibid*; provided in (25a-b)).

- (25) a. *He is wanted by the FBI.*  
 b. *\*The FBI wants him.*

It indeed appears as if the passive *be wanted* ‘be wished for’ assumed a unique new meaning, unshared with its transitive counterpart: ‘being searched for by the police/authorities’. However, many passive forms are ambiguous between adjectival and verbal readings (Wasow 1977; Levin & Rappaport 1986). I argue, using several adjective-detecting tests, that *wanted* in (25a) patterns with adjectival, rather than verbal, passives. As such, its unique drifting is unexceptional.

First, *wanted* can be modified by a superlative adjective appearing in pre-adjectival position, as demonstrated in (26a).<sup>39</sup> Moreover, it can appear as the complement of verbs like *appear* and *remain* (26b), which is argued to be an adjectival property (Wasow 1977; Bruening 2014; a.o.).

- (26) a. *Here is a list of the criminals most wanted by the FBI.*  
 b. *Dan remains wanted by the police.* (cf. *\*Dan remains interrogated by the police.*)

*Wanted* further fails verbhood diagnostics. Thus, it cannot appear in the progressive (27a), although non-stative verbs are expected to (Grimshaw 1990; Bruening 2014). Note that while the primary meaning of *wanted* is stative, its drifted meaning – when realized using a verb – is not, as it can appear in the progressive (27b). Further, *wanted* does not allow post-modification by adverbs (27c), thus failing Laskova’s (2007) test for verbhood.

- (27) a. *\*He is being wanted by the police.*  
 b. *He is being searched for by the police.*  
 c. *??He is wanted badly by the police.* (cf. *He is badly wanted by the police.*)

Incidentally, the same drift exists in Hebrew for *mevukaš* ‘requested/wanted’ (28a), and it is adjectival by diagnostics (e.g., it is licensed in the future copular construction; (28b)). In Hebrew, too, this drift is unique, as it is unshared with the transitive counterpart *bikeš* ‘requested’ (28c).

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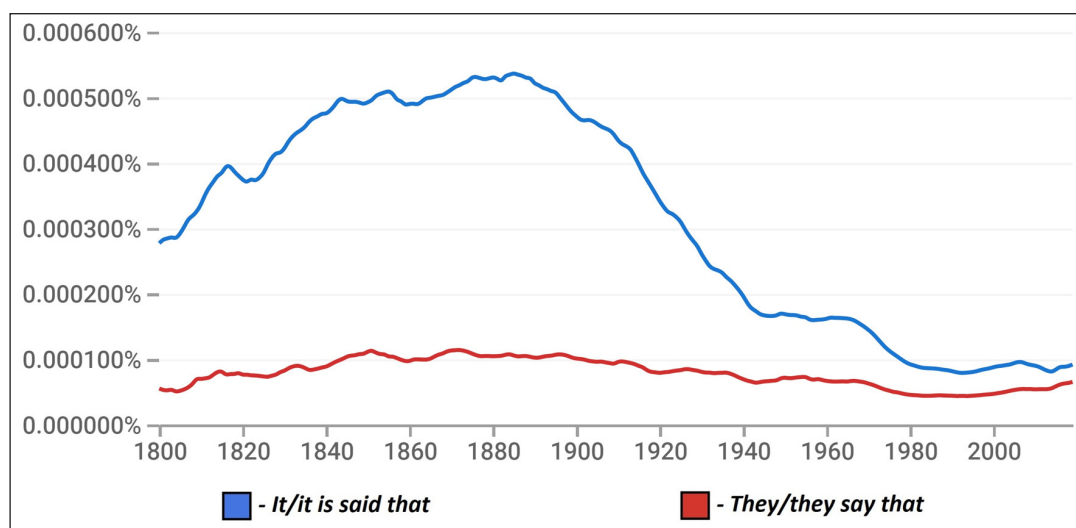
<sup>39</sup> *By*-phrases are compatible with some adjectival passives (Meltzer-Asscher 2011).

- (28) a. *dan mevukaš ‘al-yedey ha-mištara.*  
 Dan requested.SG.M by the-police.F  
 ‘Dan is wanted by the police.’
- b. *tox šana dan yihiye mevukaš ‘al-yedey ha-mištara.*  
 within a.year.F Dan be.3SG.M.FUT requested.SG.M by the-police.F  
 ‘Dan will be wanted by the police within a year.’
- c. *#ha- mištara mevakešet ‘et dan.*  
 the-police.F request.SG.F.PRS ACC Dan

The second example provided by Postal (1986: 138) involves the verb *rumor*, which is allowed in the passive (29a) but not in the active (29b) ((22iia-b) *ibid.*). Postal uses (29c) to attest for the verbhood of *rumored* ((22iii) *ibid.*).

- (29) a. *It was rumored that he was a Martian.*  
 b. *\*They rumored that he was a Martian.*  
 c. *It seems obvious/\*rumored that he was a spy.*

Horvath & Siloni (2019) address similar data and argue that *rumor* can appear in its transitive version, although rarely. They offer to attribute this discrepancy to the impersonal nature of the Agent. Indeed, a similar difference in frequency is attested between *they say that* and *it is said that*, as seen in **Figure 2** below. In general, impersonal passives are known to be more frequent than impersonal actives, as their main function is to suppress the agentive role of the subject (see e.g. Chocholoušová 2008 concerning English, Norwegian, and German).



**Figure 2:** Relative frequency of ‘It/it is said that’ vs. ‘They/they say that’ in Google Books, between the years 1800–2019, generated by Google’s Ngram Viewer.

Lastly, Bruening (2014: 405) argues that unique verbal passive drifts exist in English, supporting his claim using the example of *be born* ((108b) *ibid*; provided in (30a-b)). However, while *be born* bears passive morphology, this is by no means the determining characteristic of verbal passives, as such morphology can also be appropriate with adjectival passives, as seen above in the case of *be wanted*, and it can mark unaccusative verbs as well (e.g., *get killed*). Indeed, Bruening eliminates the possibility that *born* is an adjectival passive by showing that it can appear in the progressive form ((109a) *ibid*; provided in (30c)), but this diagnostic does not exclude the possibility that *be born* is unaccusative, which can, in principle, appear in the progressive (as long as its semantics does not block such an interpretation on independent grounds). In fact, Bruening provides the evidence showing that *be born* is not a verbal passive, as it does not license a *by*-phrase (30a), which is expected to be licensed by passive verbs (e.g., Grimshaw 1990; Dubinsky & Simango 1996; Reinhart & Siloni 2005).

- (30) a. *A child was born to/\*by Mary and Joseph.*  
 b. *\*Mary and Joseph bore a child.*  
 c. *At this very moment, the prophesied savior is being born to unsuspecting parents.*

Again, the same facts hold for the Hebrew equivalent. In the current study, the Hebrew *nolad* ‘was born’ was indeed classified as unaccusative, as its subject is mapped internally, it fails tests diagnosing adjectival status, and, similarly to the English *be born*, it disallows a *by*-phrase (compare (31a-b)).

- (31) a. *nolad*                      *yeled*      *le- meri ve- yosef.*  
           be.born.3SG.M.PST a.child.M DAT-Mary and-Joseph  
           ‘A child was born to Mary and Joseph.’  
 b. *\*nolad*                      *yeled*      ‘*al-yedey meri ve- yosef.*  
           be.born.3SG.M.PST a.child.M by            Mary and-Joseph

Being an unaccusative, the lack of drift sharing between *be born* and its transitive alternant is straightforwardly predicted by the account provided above. Unaccusatives constitute lexical entries and, as such, can assume new meanings independently of their related counterparts. The auxiliary *be* accompanying *born* is perhaps retained from earlier stages of English, where the perfective aspect selected different auxiliaries for unaccusative verbs (involving only internal arguments) and for verbs involving external arguments: *be* and *have*, respectively (see e.g. Lipson 1999).

## 7 Conclusions

The quantitative survey reported above has provided evidence that diatheses differ in their drifting capabilities. Transitives, unaccusatives, and adjectival passives all pattern alike concerning their ability to head their own unique semantic drifts, while the verbal passive is the odd one out: It



must share new meanings with its transitive counterpart, while no such limitation restricts the drifting of the other diatheses under inspection. The latter can, but need not, share their drifts with their related counterparts, and sharing might be more prone to occur across the same lexical category than across different ones.

A corpus-based study has shown that frequency cannot be the factor determining unique drifting, nor can it predict drift sharing. Moreover, when combined with idiom data, an account demarcating the domain of special meaning also fails to explain the findings (in line with Horvath & Siloni 2019). Instead, I opt for an account based on the storage mechanism of drifts in the lexicon, listing drifts as subentries of the entries serving as input for the drifting process as long as their frequency does not surpass that of the input. I propose that it is only when drifts gain substantially greater frequency than the input that they can “cut the cord” and constitute independent lexical entries. It further follows that, if only lexical entries can give rise to unique drifts, the results support independently suggested proposals that not all diatheses are created equal: Transitives, unaccusatives, and adjectival passives are argued to constitute lexical entries, and indeed, proved able to give rise to unique drifts. In contrast, verbal passives are claimed to be derived post-lexically, and as such, they are not lexically listed and cannot assume meanings unshared with their transitive counterparts.

This study has thus provided us with a novel type of evidence concerning the lexical listing of some diatheses, alongside the lack of such listing of others, and, by extension, concerning the type of processes deriving these diatheses. If transitives, unaccusatives, and adjectival passives are stored in the lexicon, they are also formed there, indicating that the lexicon is an active component of the grammar, which involves word-formation processes applying only upon the formation of new lexical items that are consequently stored. In contrast, if verbal passives are not lexical entries, they are not formed in the lexical component, and are instead derived in the syntax via operations applying anew in each derivation. Empirical evidence thus indicates that valence-changing operations can apply repeatedly or they can apply once, following which the new lexical items are stored in the lexicon. Moreover, it shows that the syntactic component is not alone: Valence-changing operations are not limited to syntax and can occur in the lexicon as well.

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## Abbreviations

ACC = accusative, DAT = dative, DEF = definite, F = feminine, FUT = future, IMP = imperative, M = masculine, PL = plural, PRS = present, PST = past, SG = singular, 2 = second person, 3 = third person.

## Supplementary files

All predicates and semantic drifts collected in terms of the pilot and quantitative surveys are provided in Appendix 1 and Appendix 2, respectively. Both appendices are available on the Open Science Framework (OSF) at the following URL: <https://osf.io/9pa4b/>. DOI: <https://doi.org/10.17605/OSF.IO/9PA4B>

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## Competing interests

The author has no competing interests to declare.

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